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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,575	03/28/2001	Zvi Yona	P-3068-US	3666

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06/05/2002

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 06/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,575

Applicant(s)

YONA ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 9 and 18 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

The specification fails to teach how could the wedge with polarization reflective planes be a “controllable polarized reflecting device”. The specification fails to teach what is the *controlling means* for making the wedge a “*controllable*” polarized reflecting device. The specification also fails to show that how could the wedge be *switched* between two angles. No switching means is disclosed for doing so.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1 –19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The phrase “complementary fractions” recited in claims 1, 10 and 19 is indefinite since it is not clear what specific property is referred here to be “*complementary*” among each of the image fractions.

The *alternative* expression recited in claims 3, and 12 is indefinite and improper since the elements recited are *not equivalent* to each other, which therefore makes the scope of the claims unclear.

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The phrase "significantly greater" recited in claim 19 is indefinite since it is not clear what is the exactly degree considered here to be "significant".

Claims 2-9, and 11-18 inherit the rejection from their respective based claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-6, 8, 10-15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Chern et al (PN. 4,968,117) in view of the patent issued to Diepeveen et al (PN. 4,682,029).**

Chern et al teaches a *helmet mounted visor display* (HVDs) that is comprised of a *cathode ray tube* (220) for generating an image, a *relay lens* (227, Figure 17) having a *defined field of view*, a *beam splitting prism* (233), serves as the *redirecting unit* for diving the image into complementary image fractions and directing the complementary image fractions to *reflective combiner* (240), serves as the *reflecting unit*, at *different angle* such that the complementary image fractions are directed to left and right eyes of an observer, (please see Figure 17). Chern et al teaches that the *reflective combiner* (24) comprises *reflective diffractive coating* such that the image light or the image fractions are diffracted by the combiner to the eyes and the field of view of the relay lens is extended to be wider, (please see Figures 17 and 18, columns 23-24). With regard to claim 10, Chern et al teaches that the reflective combiner is operative connection to the helmet.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the beam splitting prism or the redirecting unit is *switched* between two angles such that the

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image fractions are directed to the reflective combiner in a switching sense. *Diepeveen* et al in the same field of endeavor teaches a stereoscopic imager wherein a *rotating input mirror* (26 or 28) that can be switched between two angular position at high speed is used such that left eye perspective image and right eye perspective image may be redirected from light source array (28) to reach left eye and right eye respectively. The switching speed is very high so that the two image fractions are fused in the mind of the observer to create stereoscopic illusion, (please see Figures 1 and 2). It would then have been obvious to one skilled in the art to apply the teachings of *Diepeveen* et al to modify the helmet mounted visor display for the benefit of providing a *stereoscopic* HVDs display.

With regard to claims 3 and 12, *Chern* et al teaches that the reflective combiner comprising diffractive coating that may include either hologram or graded index coating in the form of binary optics. With regard to claims 4 and 13, the *Chern* et al does not teach explicitly that the reflective combiner have diffractive optics on inner and outer surface to create zero optical power for the outer scene. However such feature is either inherently included or an obvious modification to one skilled in the art since to design the HVDs with zero optical power for viewing the outside scene is a standard practice in the art.

With regard to claims 5-6, and 14-15, both *Chern* et al and *Diepeveen* et al teach the number of image fractions is two. Although these references do not teach explicitly that the image fractions are of different wavelength however to code left and right eye images with different color filters therefore make them of different wavelength is pretty standard practice in the stereoscopic art for the benefit of creating stereoscopic view. Such modification is therefore obvious to one skilled in the art for the benefit mentioned above.

The method for producing a wide field of view as recited in claim 19 is met by the disclosures of *Chern* et al and *Diepeveen* et al as described above.

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7. Claims 7, 9, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Chern et al and Diepeveen et al as applied to claims 1 and 10 above, and further in view of the patent issued to Chauvin (PN. 5,198,928).

The *helmet mounted visor display* (HVDs) taught by Chern et al in combination with the teachings of Diepeveen et al as described for claims 1 and 10 above have met all the limitations of the claims. These references however do not teach explicitly that the fractional images are of different polarization and the redirecting unit comprises polarizing reflective device. Chauvin in the same field of endeavor teaches a *binocular helmet visor display with large field of view* for viewing different images for the left and right eyes of an observer wherein the left eye and right eye image, serve as the image fractions, are *polarized orthogonally to each other* and a *polarizing X-prism having reflective polarization planes* (please see Figures 2 and 3) is included for reflecting and redirecting the different polarized left eye and right eye images to left and right eyes of the observer respectively, (please see Figure 1). It would then have been obvious to one skilled in the to apply the teachings of *Chauvin* to modify the HVDs of Chern et al in view of the Diepeveen et al to make the image fractions orthogonally polarized with polarizing X-prism to redirect the image fractions to the combiner for the benefit of creating a *stereoscopic* HVDs and to reduce the cross talk between the image fractions.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent issued to *Boot* (PN. 4,647,142) and US patent issued to *Son* et al (PN. 5,917,459) each teaches a holographic combiner for enlarging the field of the view.

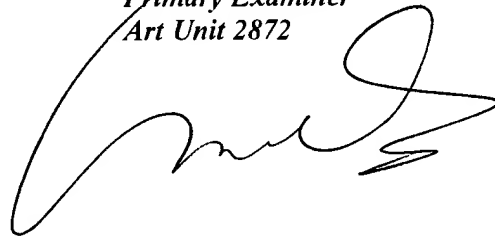
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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
May 31, 2002